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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/921,555	08/06/2001	Takeji Ueda	212284US3	7054

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EXAMINER

KORNAKOV, MICHAIL

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 04/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/921,555

Applicant(s)

UEDA ET AL.

Examiner

Michael Komakov

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 7-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-11 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Election/Restrictions

1. Applicants' election with traverse of claims 1-6 in Paper No. 6 is acknowledged. The traversal is on the ground(s) that a search and examination of the entire application would not place a serious burden on the Examiner. This is not found persuasive because in determination of patentability of the process claims the search is directed to the method **steps**, while in determination of patentability of apparatus claims the search and the primary attention is given to structural limitations of apparatus.

In the instant case the apparatus claims require the presence of a specific control system for maintaining the flow of liquids at certain speed and directions, which requires a separate search and, therefore, the searches for method and apparatus for its implementation are not coextensive. Different status, as well as different classification of these two groups were shown in the previous Office Action.

The requirement is still deemed proper and is therefore made FINAL.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that

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the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited.

The language should be clear and concise and should not repeat information given in the title.

Appropriate correction of the instant Abstract is required.

3. The disclosure is objected to because of the following informalities: Page 2, lines 6 and 7, recite US patents 626702 and 626640. Apparently, these numbers are incorrect, because a US Patent Number must be 7 characters long.

Appropriate correction is required.

Claim Objections

4. Claims 1, 2, 4 are objected to because of the following informalities: while disclosing the use of "a desired liquid (page 39, lines 6-7) and the use of "a fresh liquid of the same kind" (page 39, lines 12-13), claim 1 and dependent claims 2 and 4 recite the term "said liquid" on page 39, lines 10, 16, 20, 25; page 40, line 9. Based on the instant disclosure, it is Examiner's understanding, that the term "said liquid" characterizes "a desired liquid". However, it is advisable to add the word ---desired--- to the term "said liquid", where appropriate, thus clarifying the issue. Applicants' cooperation is highly appreciated.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 3 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by GB 2 154 434.

GB'434 teaches a cleaning operation, as a sub-step, which is employed for cleaning circuit boards during the production of printed circuits, the said circuit boards have preliminary been exposed to a plurality of chemical treatments (page 1, lines 6-16; page 2, lines 104-111).

In the process of GB'434 the boards are treated with cleaning liquid (reads on "desired liquid", as instantly claimed), for example fresh water, while being revolved around the axis of rotation 27 at the rotation speed, **wherein the centrifugal effect predominates** and water flows at a great force radially outwards over the surfaces of the circuit boards (page 2, lines 128-130; page 3, line 1; Fig 1 and 2). The said axis of rotation is located outside the boards themselves (Fig 1 and 2). GB'434 specifically indicates that as the result of the rotating movement the cleaning liquid is washed over the board surface (reads on "flowing on a surface of said substrate...under a centrifugal force", as instantly claimed) at considerably high speed of flow than due to the force of gravity alone (page 1, lines 71-74). Therefore, the limitation, which recites that "a centrifugal force greater than gravitation", is met by GB'434.

GB'434 continues treatment of circuit boards by supplying to the surfaces of revolved boards a heated water (page 3, lines 41-45) (reads on "supplying a fresh liquid of the same kind as said desired liquid", as instantly claimed). GB'434 leaves flow rate of heated water the same compare to the flow rate of cleaning liquid, which reads on the limitation, that "a flow rate of fresh liquid of the same kind is at least equal to a discharge rate of said desired liquid". Because the heated water and cleaning liquid are delivered to printing board surfaces, utilizing the same delivery means, the direction of flow of heated water of GB'434 inherently conforms with the direction of cleaning liquid (Fig 1 and 2). As also seen from Fig 1 and 2, the flows of cleaning liquid do not run against each other.

In specific regard to the limitation of claim 3, which is concerned with conducting the sub-step in an initial stage of chemical processing, it is noticed here, that the definition of "an initial stage" is not provided by the instant disclosure. Therefore, this term is given a broadest possible interpretation. GB'434 teaches further production of printed circuits, utilizing the prepared circuit boards, which includes different processing steps and inherently requires chemical processing. Therefore, the cleaning sub-step of GB'434 is performed on the initial stage of subsequent chemical processing.

Regarding the "fabrication of **semiconductor** devices", which is recited in the preamble of claim 1, it is noted that a preamble is generally not accorded any patentable weight where it merely recites the purpose of a process and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps are able to stand alone, consult *In re Hirao*, 535 F.2d 67, 190 USPQ

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15 (CCPA 1976). In the instant case, while reciting "semiconductor devices" in the preamble, the body of claim 1 discloses "a substrate", which is not depended or connected to "semiconductor devices" and is perfectly readable on any substrate, including circuit boards of GB'434.

Therefore all the limitations of the instant claims 1, 3, and 6 are either expressly or inherently met by the disclosure of GB'434.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 2, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB'434 in view of Kukanskis et al (U.S. 5,132,038).

The disclosure of GB'434 differs from the instant claims 2, 4 and 5 by the following:

a) not disclosing specifically that cleaning liquid either has high viscosity and/or adhesion **or in the alternative** the cleaning liquid is the one that contains organic substance, as per claim 2;

b) not specifying that the chemical used in the wet treatment method contains amine or ammonium fluoride, **or in the alternative** is a water containing organic solvent/substance, as per claims 4 and 5.

However, GB'434 clearly motivates a person skilled in the art to use other than water cleaning liquid by stating that even though water is used predominantly, any other cleaning liquid can also be used (col. 3, lines 106, 107). GB'434 goes even further by emphasizing that one of the goals of its cleaning procedure is to remove any chemical substances, which would be troublesome in the subsequent processing of circuit boards and especially the small bores surfaces, in which higher concentrations of such chemical substances remain (page 1, lines 14-19). Thus, GB'434 clearly motivates a

skilled artisan to employ cleaning compositions, which are formulated for treatment of circuit boards with through-hole surfaces.

Kukanskis teaches cleaning and/or desmearing the circuit boards with punched through-holes, utilizing an effective and substantially clear mixture comprised a water-immiscible **organic liquid and water**, which can be rinsed from the through-hole surfaces using conventional water rinses (col. 3, lines 21-34; col.4, lines 19-25,35-39).

Because GB'434 is concerned with cleaning of circuit boards and especially with cleanness of bore surfaces and Kukanskis teaches an effective cleaning of such surfaces utilizing substantially clear mixture comprised a water-immiscible **organic liquid and water**, one skilled in the art at the time the invention was made, motivated by the teaching of Kukanskis, would have found it obvious to utilize the clear mixture of Kukanskis as a cleaning liquid in order to treat the circuit boards and especially the small bores surfaces in GB'434 with the reasonable expectation of success, and thus to arrive at the instantly claimed subject matter.

This renders claims 2, 4 and 5 prima facie obvious and properly rejected under 35 USC 103 (a).

11. Applicant should note that additional prior art cited in PTOL-892 shows general state of the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (703) 305-0400. The examiner can normally be reached on 9:00am - 5:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (703) 308-4333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872 9310 for regular communications and (703) 872 9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 2450.

M. Kornakov

Michael Kornakov
Examiner
Art Unit 1746

April 24, 2003